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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

MAILED

Application Number: 10/749,862
Filing Date: December 31, 2003
Appellant(s): KISELEV ET AL.

SEP 18 2007

Technology Center 2100

Eric A. Stephenson
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/19/2007 appealing from the Office action
mailed 8/15/2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

GROUNDS OF REJECTION NOT ON REVIEW

The following grounds of rejection have not been withdrawn by the examiner, but they are not under review on appeal because they have not been presented for review in the appellant's brief.

Claims 1, 5, 6, 9, and 18 are provisionally rejected on the grounds of non-statutory double patenting over claims 24, 25, 32, and 41 of copending Application No. 11/242,216.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

7,177,993	Kiselev et al.	2-2007
7,028,156	Kiselev et al.	4-2006
2004/0205298	Bearden et al.	10-2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1, 5, 9, 13, 14, and 18 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 9, and 12 of U.S. Patent No. 7,028,156 in view of Bearden et al. (US 2004/0205298).

10/479,862	7,028,156
5. A method comprising: receiving a first read request from a computer system.	1. In a data storage system, a method comprising receiving a first request to read data from a data volume, wherein the first request is received from a computer system
Reading data from a first mirror of a data volume in response to receiving the first read request.	Reading data from a first memory configured to store the data volume in response to receiving the first request
Reading data from a second mirror of the data volume in response to receiving the first read request.	Reading data from a second memory configured to store a mirrored copy of the data volume in response to receiving the first request
Returning the data read from the first mirror to the computer system.	Returning the data read from the first memory to the computer system
Storing the data read from the second mirror into a cache memory.	Storing the data read from the second memory into a memory device

Receiving a second read request from the computer system, wherein the second read request is received subsequent to the first read request, and wherein the first and second read requests seek the same data.	Receiving a second request to read from the data volume, wherein the second request is received from the computer system, and wherein the first and second requests seek the same data.
Returning data stored in the cache memory in response to receiving the second read request.	<i>Bearden teaches returning data stored in a cache when the data is requested (paragraph 0029)</i>
Further comprising comparing time T1 with time T2, wherein time T1 is the time when the first read request was received, and wherein time T2 is the time when the second read request was received	Comparing time T1 with time T2, wherein time T1 is the time when the first request was received, and wherein time T2 is the time when the second request was received

The invention of claims 1, 5, 9, 13, 14, and 18 differs from the invention claimed in patent 7,028,156 as shown *supra*.

Bearden teaches the usage of pre-fetching data that is likely to be requested by a host computer, paragraph 0004.

US patent 7,028,156 and Bearden are analogous art because they are from the same field of endeavor, the design of computer data storage systems.

At the time of the invention it would have been obvious to one of ordinary skill in the art to pre-fetch the data stored in the second mirror and store it in a cache memory.

The motivation for doing so would have been to improve the data rate by retrieving data from storage ahead of time, Bearden paragraph 0004.

Therefore, it would have been obvious to combine Bearden with US patent 7,028,156 for the benefit of improving the data rate between the storage system and the requesting computer to obtain the invention as specified in claims 1, 5, 9, 13, 14, and 18.

Claims 1-6, 9-11, 13, and 18 are provisionally rejected on the ground of nonstatutory double patenting over claims 1-4, 8, 14-17, and 23 of copending Application No. 10/742,129 in view of Bearden (cited *supra*). This is a provisional double patenting rejection since the conflicting claims have not yet been patented. The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

Independent **claim 1** of the instant applicant differs from independent claim 1 of application 10/742,129 in that the instant application performs pre-fetching of the data stored in the second mirror when the first read request is received and returns the data stored in the cache when the second read request is received.

Independent **claim 9** of the instant applicant differs from independent claim 14 of application 10/742,129 in that the instant application performs pre-fetching of the data

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stored in the second mirror when the first read request is received and returns the data stored in the cache when the second read request is received.

Independent claim 18 of the instant applicant differs from independent claim 23 of application 10/742,129 in that the instant application performs pre-fetching of the data stored in the second mirror when the first read request is received and returns the data stored in the cache when the second read request is received.

Bearden teaches the usage of pre-fetching data that is likely to be requested by a host computer, paragraph 0004.

Application No. 10/742,129 and Bearden are analogous art because they are from the same field of endeavor, the design of computer data storage systems.

At the time of the invention it would have been obvious to one of ordinary skill in the art to pre-fetch the data stored in the second mirror and store it in a cache memory.

The motivation for doing so would have been to improve the data rate by retrieving data from storage ahead of time, Bearden paragraph 0004.

Therefore, it would have been obvious to combine Bearden with Application No. 10/742,129 for the benefit of improving the data rate between the storage system and the requesting computer to obtain the invention as specified in claims 1-6, 9-11, 13, and 18.

Dependent claims 2-6, 10, 11, and 13 correspond to the claims of application 10/742,129 as follows:

10/749,862	2	3	4	5	6	10	11	13
10/742,129	2	3	4	8	8	15	16	17

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Claims 1, 5, 6, 9, and 18 are provisionally rejected on the ground of nonstatutory double patenting over claims 24, 25, 32, and 41 of copending Application No. 11/242,216. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

All limitations of independent **claim 1** of the instant application are recited in claim 24 of application 11/242,216.

Dependent **claims 5 and 6** of the instant application specify comparing two times relating to when read requests are received, and only returning the data stored in the cache if the second request occurs within a predetermined amount of time after the first request. Claim 25 of application 11/142,216 requires returning the data stored in the

memory device if the second request is received within a predetermined amount of time after receiving the first request.

All limitations of independent **claim 9** of the instant application are recited in claim 32 of application 11/142,216.

All limitations of independent **claim 18** of the instant application are recited in claim 40 of application 11/142,216.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other copending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

(10) Response to Argument

In the first paragraph under the heading Arguments, with respect to the rejection of claims 1, 5, 9, 13, 14, and 18 on the grounds of non-statutory obviousness-type double patenting over claims 1, 9, and 12 of US Patent 7,028,156 to Kiselev et al. (hereinafter the '156 Patent) in view of US Patent Application Publication 2004/0205298 to Bearden et al. (hereinafter Bearden), Applicant argues:

"Appellants respectfully submit the use of Bearden in providing the non-statutory obviousness-type double patenting rejection as to these claims is inappropriate since there is no evidence to suggest that Bearden has the same inventive entity, is commonly assigned, has at least one common inventor, or was made as a result of activities undertaken within the scope of a joint research agreement."

The Examiner respectfully notes that there is no requirement that Bearden have the same inventive entity, is commonly assigned, has at least one common inventor, or was made as a result of activities undertaken within the scope of a joint research agreement. In support of Applicant's argument, Applicant cites note 3 from form paragraph 8.36, which states:

"This form paragraph may be used where the prior invention is claimed in a patent which is:

- (a) by the same inventive entity, or*
- (b) by a different inventive entity and is commonly assigned even though there is no common inventor, or*
- (c) not commonly assigned but has at least one common inventor, or*
- (d) made as a result of activities undertaken within the scope of a joint research agreement"*

The Examiner respectfully notes that the '156 Patent, in which the prior invention is claimed, has the same inventive entity as the instant application, Oleg Kiselev and Ronald S. Karr. The invention recited in claims 1, 5, 9, 13, 14, and 18 of the instant application is an obvious variation of the invention recited in claims 1, 9, and 12 of the '156 Patent. As stated in M.P.E.P. 804(II)(B)(1):

"A double patenting rejection of the obviousness-type, if not based on an anticipation rationale, is "analogous to [a failure to meet] the nonobviousness requirement of 35 U.S.C. 103" except that the patent principally underlying the double patenting rejection is not considered prior art. In re Braithwaite, 379 F.2d

594, 154 USPQ 29 (CCPA 1967). Therefore, the analysis employed in an obviousness-type double patenting rejection parallels the guidelines for analysis of a 35 U.S.C. 103 obviousness determination. *In re Braat*, 937 F.2d 589, 19 USPQ2d 1289 (Fed. Cir. 1991); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985)."

The Examiner respectfully notes that claims 1, 5, 9, 13, 14, and 18 of the instant application are rejected on the grounds of non-statutory obviousness-type double patenting over claims 1, 9, and 12 of the '156 Patent in view of Bearden. Accordingly, Bearden was used to show that the differences between the invention of claims 1, 9, and 12 of the '156 Patent and claims 1, 5, 9, 13, 14, and 18 of the instant application would have been obvious to one of ordinary skill in the art at the time of invention.

Accordingly, the Examiner respectfully submits that the use of Bearden in the obviousness-type non-statutory double-patenting rejection of claims 1, 5, 9, 13, 14, and 18 of the instant application is both appropriate and consistent with Office policy.

In the first paragraph beginning on page 6, with respect to the rejection of claims 1, 5, 9, 13, 14, and 18 on the grounds of non-statutory obviousness-type double patenting over claims 1, 9, and 12 of the '156 Patent in view of Bearden, Applicant argues:

"The Final Office Action admits the limitation 'returning data stored in the cache memory in response to receiving the second read request' of independent claims 1, 9, and 18, is not found in the corresponding 156 Patent claims. However, the

*Final Office Action argues that this missing limitation can be found in paragraph [0029] of Bearden. See Final Office Action claim chart entries on pages 4, 5, and 7. Paragraph [0029] of Bearden does not teach returning data stored in the cache memory in response to receiving the second read request. Rather, paragraph [0029] of Bearden teaches returning data stored in the cache memory when the data is requested. Independent Claims 1, 9, and 18 make clear that the 'second request' is received from the same computer system from which the 'first request was received, and that the first and second requests seek the same data. Thus, independent Claims 1, 9, and 18 define a relationship between the first and second requests. No such relationship is alleged to exist between the 'first request' in claims of the 156 patent and the request of paragraph [0029] of Bearden. Accordingly, Appellants assert that the combination of the cited claims of the 156 Patent and the cited sections of Bearden do not teach or fairly suggest all the limitations of independent Claims 1, 9, and 18 as is required by MPEP 2142 to establish a *prima facie* basis."* (emphasis in original)

The Examiner respectfully notes that the claims of the '156 Patent recite receiving a second request to read data from the data volume, wherein the second request is received from the computer system, and wherein the first and second requests seek the same data. As such, the claims of the '156 Patent already require the relationship between the first request and the second request argued by the Applicant to patentably distinguish claims 1, 9, and 18 of the instant application from claims 1, 9, and 12 of the '156 Patent. Claims 1, 9, and 18 of the instant application

differ from claims 1, 9, and 12 of the '156 Patent in that claims 1, 9, and 18 of the instant application require that the data stored in the cache memory is returned in response to receiving the second read request.

Bearden paragraph 0029 states:

"In addition, the storage device 102 may utilize cache memory to facilitate rapid execution of read and write operations. When the host device 104 accesses data using a host address (e.g., H₅), the storage device may access the data in cache, rather than on mass storage media (e.g., disk or tape)."

As known by one of ordinary skill in the art, and as shown by Bearden paragraph 0029, using cache memory facilitates rapid execution of read operations. Accordingly, it would be obvious to one of ordinary skill in the art to return the data stored in the memory recited in claims 1, 9, and 12 of the '156 Patent, as these claims already require that the data from the second memory is stored in the memory device, to obtain the invention as specified in claims 1, 5, 9, 13, 14, and 18 of the instant application.

For the above stated reasons, The Examiner respectfully submits that the rejection of claims 1, 5, 9, 13, 14, and 18 on the grounds of non-statutory obviousness-type double patenting over claims 1, 9, and 12 of US Patent 7,028,156 to Kiselev et al. in view of US Patent Application Publication 2004/0205298 to Bearden et al. is proper and should be upheld.

In the second paragraph beginning on page 7, with respect to the rejection of claims 1-6, 9-11, 13, and 18 on the grounds of non-statutory obviousness-type double

patenting over claims 1-4, 8, 14-17, and 23 of copending US Patent Application 10/742,129 (now US Patent 7,177,993, hereinafter the '993 Patent) in view of US Patent Application Publication 2004/0205298 to Bearden et al. (hereinafter Bearden), Applicant argues:

"Appellants respectfully submit the use of Bearden in providing the provisional non-statutory obviousness-type double patenting rejections is inappropriate since there is no evidence to suggest that Bearden has the same inventive entity, is commonly assigned, has at least one common inventor, or was made as a result of activities undertaken within the scope of a joint research agreement."

The Examiner respectfully notes that the '993 Patent, in which the prior invention is claimed, has the same inventive entity as the instant application, Oleg Kiselev and Ronald S. Karr. The invention recited in claims 1-6, 9-11, 13, and 18 of the instant application is an obvious variation of the invention recited in claims 1-4, 8, 14-17, and 23 of US Patent Application 10/742,129, corresponding to claims 1-4, 8, 9-11, 15 and 17 of the '156 Patent. For the same reasons presented above with respect to Applicant's arguments with respect to the use of Bearden in the rejection of claims 1, 5, 9, 13, 14, and 18 on the grounds of non-statutory obviousness-type double patenting over claims 1, 9, and 12 of the '156 Patent in view of Bearden, the Examiner respectfully submits that the use of Bearden in the rejection of claims 1-6, 9-11, 13, and 18 on the grounds of non-statutory obviousness-type double patenting over claims 1-4, 8, 9-11, 15 and 17 of the '156 Patent in view of Bearden is both appropriate and consistent with Office policy.

In the third paragraph beginning on page 7, continuing on page 8, with respect to the rejection of claims 1-6, 9-11, 13, and 18 on the grounds of non-statutory obviousness-type double patenting over claims 1-4, 8, 14-17, and 23 of copending US Patent Application 10/742,129 (now claims 1-4, 8, 9-11, 15 and 17 of the '993 Patent) in view of Bearden, Applicant argues:

"The Final Office Action argues independent claims 1, 9, and 18 differ from independent Claims 1, 14, and 23, respectively, of the 993 Patent in that the instant application performs pre-fetching of the data stored in the second mirror when the first request is received and returns the data stored in the cache when the second read request is received. The Final Office Action argues Bearden teaches the use of pre-fetching data that is likely to be requested by a host computer, citing paragraph [0004] in support thereof. See, Final Office Action, page 8. Then, the Final Office Action asserts it would have been obvious to pre-fetch the data stored in the second mirror and store it in a cache memory. See, Final Office Action, page 9. The Final Office Action provides no basis for this last assertion. Independent claims 1, 9, and 18 recite reading data from the first and second mirrors in response to receiving the first read request, and this limitation is not taught or fairly suggested in independent claims 1, 14, and 23 of the 993 Patent or in paragraph [0004] of Bearden." (emphasis in original)

The Examiner respectfully notes that motivation for fetching the data stored in the second mirror and storing it in a cache mirror was provided in paragraph 18 of the Final

Office action, which states: "The motivation for doing so would have been to improve the data rate by retrieving data from storage ahead of time, Bearden paragraph 0004."

The claims of the '993 Patent teach receiving a second read request, wherein the second read request is received from the computer system, wherein the second read request is received subsequent to the first read request, and wherein the first and second read requests are for the same data. This differs from the claims of the instant application, which require that the data is read from the first and second mirror in response to the first read request, storing the data read from the second mirror in a cache memory, and returning the data stored in the cache memory in response to receiving the second read request.

Bearden paragraph 0004 states:

"Cache is typically used to temporarily store data that is most likely to be requested by a host computer. By read pre-fetching (i.e., retrieving data from the host computer's mass storage media ahead of time) data before the data is requested, data rate may be improved."

As the claims of the '993 Patent already anticipate receiving a second request for the same data, and that a second request for the same data should result in data being read from an alternate mirror of the data volume, it would be obvious to one of ordinary skill in the art that by pre-fetching the data from the alternate mirror before the second request is received and storing the data from the alternate mirror in a cache, the requested data may be returned to the host more quickly than if the system had to wait for the data to be read from slower memory.

For the above stated reasons, The Examiner respectfully submits that the rejection of claims 1-6, 9-11, 13, and 18 on the grounds of non-statutory obviousness-type double patenting over claims 1-4, 8, 9-11, 15 and 17 of US Patent 7,177,993 to Kiselev et al. in view of US Patent Application Publication 2004/0205298 to Bearden et al. is proper and should be upheld.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

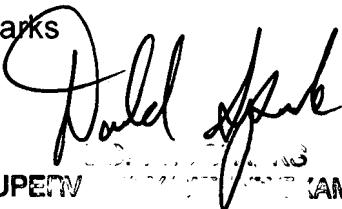
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